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ABSTRACT

Designed to provide a concise description of traditional instructional techniques, as well as more recent technology-based techniques, this 11-part guidebook includes the following sections: (1) "The Value of Planning"; (2) "Aids to Effective Instruction," reviewing the reasons for employing learning objectives, Bloom's taxonomy of objectives for cognitive learning, and criticisms of objectives; (3) "Principles of Teaching Based on the Principles of Learning," which includes suggestions for effective teaching drawing on behavioristic theories, cognitive theories, and motivation and personality theories; (4) "The Functions of an Instructor," which discusses presenting a stimulus, directing attention, acting as a model for terminal behavior, furnishing external clues, guiding the direction of thinking, developing transfer of knowledge, evaluating learning, and providing feedback; (5) "Major Teaching Styles," which reviews the didactic and heuristic teaching approaches; (6) "Common Instructional Techniques," which includes a discussion of the role of group size; (7) "Individualized Instruction," which explores packaged programs, flexible programs, personal individual programs, and independent study; (8) "Small Group Instruction," which discusses team projects, discovery learning, and group discussions; (9) "Lecture Instruction," which examines small- and large-group lectures, listening skills, attending to signal changes, retroactive inhibition, and control of classroom behavior; (10) "Mastery Learning"; and (11) "Current Instructional Innovations," including educational games, team teaching, programmed instruction, computer-assisted instruction, personalized systems of instruction, and interactive video. (PAA)

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College of New Caledonia. Centre for Improved Teaching
Prince George, British Columbia
March 1983

RUBADEAU, GARRETT & RUBADEAU

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A Short Guide To Instructional Techniques

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PREFACE

It would be very naive on our part to assume the reader has no understanding or familiarity with instructional techniques. All of us have been exposed to a very wide array of instructional techniques, beginning with the work of our parents trying to teach us to remain in the living state, at least until we enter kindergarten. Further experiences with instructional techniques came from the various teachers we encountered through the school system, as well as those things that we learned in an informal manner. With continued effort in formal education into the college and university level, we were exposed to a phenomenal variety of instructional techniques, running from the ultra aloof, "I can walk on water" approach to the warm and accepting, "Let's take a look and see where the problem is" approach.

Out of all these experiences, we tend to grab and hold on to an instructional approach with which we can feel most comfortable, even though it may not be the most effective or efficient instructional technique.

The purpose of this Guide is to provide a concise description of both traditional instructional techniques, as well as more recent technology based techniques.

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We would also like to acknowledge the very excellent work of Mrs. Lillian Thom for putting the manuscript on the Word Processor and the many changes in style and organization that she helped us work through to the final product. Finally, we would like to thank Diane Jacobs for her beautiful art work on the cover design and layout.

March 1983

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INTRODUCTION

As you may be aware, there are a number of different approaches to instruction. An instructional procedure that may be very effective for one instructor may be a complete disaster for another instructor. Whatever procedure you decide to employ, a major factor is that it is you who must develop rapport when you are working with your students. That is, if the students perceive you as a sincere, interested and helpful instructor, they will usually be willing to put some amount of effort into learning the material. If, on the other hand, they perceive you as a hostile, cold, uncaring instructor, they will probably learn all they are going to learn from reading the text and assigned readings and avoid interactions with you as much as possible.

The purpose of this booklet is to assist you in the instructional process, by pointing out some of the factors that may be of value in enhancing your work with students. Topics to be covered are: The Value of Planning; Aids to Effective Instruction; Principles of Teaching Based on The Principles of Learning; Functions of an Instructor; Major Teaching Styles; Common Instructional Procedures; and Current Instructional Innovations.

THE VALUE OF PLANNING

Planning is a very important component of effective instruction, as well as effective learning. If your material and delivery is well planned, your students will learn it faster and remember it longer. A well-planned block of course material will be much more meaningful to your students than a block of material that skips back and forth and has virtually little or no organization. Thus, a well planned course or block of course material will give students a better understanding of the subject and a better foundation for later learning.

Planning helps you as an instructor in more subtle ways as well. When you come to class with a well-thought-out plan, this projects self-confidence. You know what you are doing and where you are going with the material. Students are very sensitive to their instructor's first impression, especially during the first few days of a course. As a result, they are much more likely to respect those instructors who clearly demonstrate that they know what they are doing and where the course is going.

New instructors often spend a great deal of time worrying about being able to control their classes. Planning is of real value here, too. Instructors who plan their material will have less difficulty with their classes, because a good plan minimizes the amount of "dead time" when breaks in the

flow of instruction give students time to get bored, go to sleep, start their own discussions, and so forth. Hence, keeping the students' attention on what they are learning is the first step toward keeping control.

AIDS TO EFFECTIVE INSTRUCTION

An effective instructional plan is built on clearly stated goals. Every program of instruction has one or more learning objectives, even though these objectives are not always explicitly stated. In truth, the majority of instructors probably do not outline their objectives at all. In recent years, however, a growing number of instructors are realizing that outlining learning objectives has important effects on instruction and learning, in that it specifies where the instructor is going and/or what he hopes to achieve not only for the student, but focuses the instructor's efforts as well.

REASONS FOR EMPLOYING LEARNING OBJECTIVES:

One important reason for employing learning objectives that are specified in behavioural terms is simply that instructors need to know the nature of the behaviour they are eventually hoping to establish - called the terminal behaviour. Terminal behaviours answer such questions as "What should the student enrolled in a particular course be expected to do after leaving that course that he/she could not do previ-

ously?" Knowing the answer and clearly defining the terminal behaviours, makes it easier to plan the course material sensibly and effectively.

Another important reason for specifying learning objectives is that often they are the only means of properly evaluating the effectiveness of what the instructor is doing in the class. If the instructor and students don't know what the goals of the course are, a test score by itself tells them little about whether the goal was attained. Further, clear learning objectives help distinguish between instructor behaviours that lead to increased learning and those that are either irrelevant or counter-productive.

Specifying learning objectives in behavioural terms make the students and instructor aware of the purpose of the instruction and what should be derived from it.

In order for a learning objective to be of value, it must have two characteristics: clarity and importance. Clarity can be attained by stating the objectives in terms of observable behaviours. However, an objective, no matter how well it is stated, is not any good unless it also makes some important contribution to the overall goals of education. The task of specifying learning objectives should not be approached as if each learning experience demanded some unique form of behaviour not found in any other learning experience. To take such an approach leads to the learning

of petty details and trivia. A much more effective approach is to determine the general classes or categories of behaviour that are desired in a given situation. That is, to plan on the basis of a taxonomy of objectives.

A taxonomy of objectives tells the instructor the range of objectives that are available in a particular type of learning situation. Now, it is not feasible or appropriate to try to achieve all of these objectives for every topic in every course. The taxonomy does, however, provide you, the instructor, with a reminder of the possibilities and can be used to systematically check off the kinds of objectives that would be most appropriate and most important to emphasize.

BLOOM'S TAXONOMY OF OBJECTIVES FOR COGNITIVE LEARNING:

Back in 1956, Ben Bloom and his associates, developed a taxonomy of learning objectives useful to instructors. The first part of the taxonomy applies to cognition, or the ability to think and understand, and includes six main categories: knowledge, comprehension, application, analysis, synthesis, and evaluation. The first four of these categories of objectives apply to skills involving understanding and concept formation, while the last two apply to skills involving creativity. The classes of behaviour are arranged in a hierarchy, running from the simple to the complex and from the concrete to the abstract. A brief outline of Bloom's

taxonomy of cognitive learning is provided. For a detailed description of Bloom's Cognitive Taxonomy, see Rubadeau and Garrett - A Short Guide to Writing Instructional Objectives.

1. KNOWLEDGE: - This is, in effect, rote memory. The students' task is to reproduce material presented during instruction, with little or no change. Examples include: stating rules, memorizing definitions, or stating facts. Knowledge should not be confused with comprehension, since it is quite possible to learn and repeat something, without having any idea of its meaning.

2. COMPREHENSION: - The ability to restate or identify material in a form that is not an exact replica of the original. Examples include: summarizing, paraphrasing, or translating. Comprehension may reflect a low level of understanding, as it does not require the ability to grasp the full implication of the material presented or the ability to relate previously learned material to new material.

3. APPLICATION: - The ability to solve problems that are similar in method or principle but different in form from the ones seen previously. For example, the student might be asked to apply the rules of English grammar to the construction of sentences with nonsense words. If all that is involved is the application of simple con-

cepts, the task is comprehension, not application. For example the objective: Transpose the attached melody from the key of C to the key of F.

4. ANALYSIS: - Involves the ability to break down a whole into its parts. For example: analyzing the nutritional value of several foods to determine protein and calcium content and selecting the most nutritional food. The example given by the student should not be identical to those used in instruction, otherwise the skill being shown is knowledge, rather than analysis.

5. SYNTHESIS: - The ability to combine knowledge, skills, ideas and experiences to create a new and original product. For example: designing an evening gown or writing an essay. Synthesis does not involve a correct or best solution. Here, any product that meets acceptable standards of workmanship in combination with the students' expression of creativity meets this objective.

6. EVALUATION: - The ability to judge whether or not a person's work meets the specified criterion, or the ability to compare it against someone else's work. The student should be able to give some rationale as to why he/she think as they do. For example: comparing the advantages and disadvantages of two different political parties (Liberal and NDP) with the ability to state the underlying reasons for one's opinion.

CRITICISMS OF OBJECTIVES:

To make sure we do not leave you with the false impression that everyone is wildly enthusiastic about employing learning objectives, it is only fair we present the criticisms that have been put forward.

One set of critics of behavioural learning objectives feel that instructors should not limit their concern to behaviour changes that might occur by the end of a course. Rather, instructors should also plan for permanent changes that might be expected at some unspecified time in the future. For example, a good instructor, in this view, would be one who might prepare an excellent course on ecology that the student would remember and utilize years later when they plan a garden.

We have no quarrel with formulating hypotheses about behaviour in the distant future, if that is the only goal. However, for most students, indication of immediate learning is usually a requirement for demonstrable change in behaviour in the future. Students will be more apt to remember course material later when they have a chance to put the learning to work, if they can demonstrate now that they have learned something.

The humanistic critics contend there is something mechanistic, dehumanizing and dictatorial about the learning objectives approach. Using learning objectives puts the

instructor, rather than the student, in control of the kinds of learning that takes place. The taxonomist response, is that instructors have an important role in the socialization process, as well as the knowledge and abilities students will need as responsible adults. Further, instruction is not necessarily mechanical simply because objectives are planned - many different techniques of instruction and evaluation are available.

Probably the most common criticism of expecting instructors to specify learning objectives in terms of measurable behaviours is that it is unrealistic. What this seems to imply, is that the instructors never had to specify learning objectives before, so why bother to do it now. It also seems to imply that my instruction is outstanding now, so why change procedures. The answer to those responses comes from students evaluation of the instruction and the course.

PRINCIPLES OF TEACHING BASED ON THE PRINCIPLES OF LEARNING

Theories of learning deal with the ways an individual learns, while theories of teaching deal with the ways in which a person (the instructor) influences another person (the student) to learn. While there are numerous learning theories that have made some positive contributions to enhance teaching, it is probably easiest to deal with the learning principles that were emphasized by three major

groupings of theories: Behaviouristic (SR) Theories; Cognitive Theories; and Motivation and Personality Theories.

1. SUGGESTIONS FOR EFFECTIVE TEACHING FROM BEHAVIOURISTIC (SR) THEORIES:

   a. The learner should be actively involved in the learning process, rather than taking the role of a passive listener or viewer.

   b. Practice or repetition is very important in acquiring a skill or knowledge and for retention of the skill or knowledge through overlearning.

   c. Reinforcement is crucial, in that correct responses should be rewarded. In fact, intermittent reinforcement is an extremely powerful motivator.

   d. Generalization and Discrimination suggest the value of practice in a variety of settings in order for learning to become appropriate to a wider range of stimuli (generalization), or a more restricted range of stimuli (discrimination).

   e. Novelty in learning can be enhanced through the imitation of models, cueing (providing cues for certain behaviours), and shaping (which reinforces behaviours as they come closer and closer to the expected behaviour).

2. SUGGESTIONS FOR EFFECTIVE TEACHING FROM COGNITIVE THEORIES:

a. The Perceptual Features of a learning problem should be structured and presented that they are open to the inspection of the learner. That is, the directions, sequences, patterns and so forth, are essential features that must be given to the learner.

b. The Organization of Knowledge is an essential concern, so the direction from simple to complex is not arbitrary, but rather, flows from simplified to more complex wholes.

c. Learning is Culturally Relative, to both the wider culture and subcultures of which the learner is a member, and which may affect his/her learning.

d. Cognitive feedback confirms correct knowledge and corrects faulty learning.

e. Goal-Setting by the learner is important, as motivation for learning and successes and failures will determine how the learner will set future goals.

f. Divergent Thinking, which leads to inventive problem solving or the creation of novel products is to be supported along with convergent thinking, which leads to logically correct answers.

3. SUGGESTIONS FOR EFFECTIVE TEACHING FROM MOTIVATION AND PERSONALITY THEORIES:

a. Learner's Abilities are important and provisions have to be made for individual differences.

b. Postnatal Development may be as important as heredity and congenital determiners of ability and interest, hence, the learner must be understood in terms of the influences that have shaped his/her development.

c. Learning is Culturally Relative, with both the broader culture and subcultures to which the learner belongs affecting his/her learning.

d. The Anxiety Level of each learner may determine the beneficial or detrimental affects of certain kinds of encouragements to learn.

e. The Same Objective Situation may tap appropriate motives for one learner and not for another.

f. The Group Atmosphere for learning will affect satisfaction of learning as well as the products of learning.

THE FUNCTIONS OF AN INSTRUCTOR

All instructors have eight instructional functions that they have to deal with in any type of instructional setting. How they manage these functions will have a tremendous impact on the rate and amount of learning.

1. PRESENTING THE STIMULUS:

The instructor has to provide the students with appropriate stimuli to catch their attention. These are the external cues that direct their attention to the concepts, skills or ideas to be learned. In the problem-solving or discovery approach to learning, the problem presented has to be linked very closely to reality.

2. DIRECTING ATTENTION:

Through the use of direct commands, suggestions and comments, the instructor directs the attention of the students to the important stimuli such as: concepts, skills or ideas.

3. ACTING AS A MODEL FOR TERMINAL BEHAVIOUR:

You begin with the general nature of a task and as a model for the students work your way through to the specific terminal behaviours expected on the task. Modeling performance may be by demonstrations, oral, or written communications.

4. FURNISHING EXTERNAL CUES:

These refer to extra cues that are used initially to help the learner differentiate stimuli, eg., diagrams, pictures, graphs. These external cues are usually omitted as the learner becomes familiar with the concept, skill or idea.

5. GUIDING THE DIRECTION OF THINKING:

This is a crucial task in the discovery or problem-solving approach, where you have to guide the learner's thinking in order to reduce the occurrence of irrelevant hypotheses. The guidance usually takes the form of dropping "hints" or "suggesting" different directions for thinking.

6. DEVELOPING TRANSFER OF KNOWLEDGE:

This refers to utilizing the concepts, skills, or ideas that the students have learned in new or novel situations. This can be accomplished in several ways such as: Through discussion or dialogue; posing a question; or placing the student into a problem situation where the skills and/or knowledge have to be demonstrated, such as a flight simulator or driving simulator.

7. EVALUATION OF LEARNING:

The task for the instructor is to present problem situations that will indicate what the student has learned. This evaluation must accurately reflect the previously defined educational objectives as well as the course content that was presented. The usual procedure for evaluating learning is to ask questions. Questions can be asked in many ways. For further information in this area, consult Rubadeau, Garrett & Rubadeau - Appropriate Testing.

8. PROVIDING FEEDBACK:

An extremely important task for every instructor is to provide feedback to his/her students regarding the correctness of their responses on the evaluations of learning.

MAJOR TEACHING STYLES

The two major teaching styles are the didactic and heuristics style.

In the Didactic style of teaching, the instructor is primarily involved in conveying skills, knowledge and attitudes to the students. This is an instructor-centred orientation, where the criterion for assessing learning is the learner's ability to utilize the material provided by the instructor in the solution of problems. Achievement tests are the common measures employed with the didactic teaching style.

The Heuristics teaching style attempts to promote learning through the discovery or problem-solving approach. Here, the emphasis is on getting the student to think logically and scientifically. Thus, in the heuristics style of teaching we are more interested in the process of learning rather than the product. Responsibility for learning is shared by the instructor and student, as both have to participate in order to keep the process moving.

COMMON INSTRUCTIONAL TECHNIQUES

An instructional technique is nothing more than a planned sequence of activities directed toward helping a learner arrive at a goal. We do not have "the" answer as to which the best instructional technique for you. We do, however, believe we can provide you with a description of several techniques from which you can select the one(s) that meet your specific needs. One factor that will determine at least to some extent the instructional technique that you will use will be the size of the class with which you are working.

GROUP SIZE:

In effect, group size refers to the number of students working with an instructor. Here, we are really dealing with three different approaches that are spread over four levels. Level One is Individualized Instruction, which is the one-on-one situation. That is, one student at a time working with an instructor. This approach can be very rewarding, but it is also extremely time-consuming. You also have to keep in mind that not every student learns best this way. Level Two is the Small-Group Instruction. For our purposes, a small group is two to nine students. You may operate more than one small group at a time, but keep the group sizes small. By retaining small group sizes, students are not able to "opt out," that is, they are virtually forced

to participate. On Level Three we have Lecture Instruction. Usually forty to forty-five students can be involved in this level of instruction. With this size group, you still have close physical proximity and personal contact. You will find that you will develop certain patterns in these larger groups, e.g. - you become very organized, you may lecture from a particular spot, or you may tend to call on particular students. Level Four deals with Lecture Instruction with groups larger than forty-five. Here, not only is rapport a necessary factor, but also your ability to organize and present material in novel and interesting ways. The reserved and shy students have to be drawn out very carefully, otherwise you will have the group with you physically, but not mentally. Each of these levels has its advantages and disadvantages. We will begin with the various types of individualized instruction.

INDIVIDUALIZED INSTRUCTION

As an instructor, you will frequently have students who need your assistance on a one-to-one basis. Each of these students will have their own unique needs. As a result, you have a number of possibilities for instructional techniques. You then plan and develop the various learning activities to meet these unique needs. While this highly focused planning and management of course content should be the goal of all instruction, it appears to be the special goal of individual-

ized instruction. We have ordered individualized instruction into the following four types: Packaged Individualized Programs, Flexible Individualized Programs, Personal Individualized Programs, and Independent Study.

1. PACKAGED INDIVIDUALIZED PROGRAMS:

In the packaged individualized program as in other instructional approaches, the organization (college or school) determines the objectives and instructional techniques. Here, we are dealing with programmed instruction, language labs, and multimedia programs. The psychologist, B.F. Skinner, developed the earliest type of individualized instruction, calling his material programmed instruction. Skinner used a brief presentation of content in frames. In each presentation, a cue signaled the correct response. These cues usually required an active response on the part of the learner, such as filling in a blank. Once the response had been made, the student reads the correct response before going on to the next frame. In this way, knowledge of the correct response reinforces the learner.

Some generalizations about programmed instruction. First, learning is faster with programmed instruction than with traditional materials. Second, programmed instruction is probably better for memory tasks or for drilling material than traditional approaches. Third,

and finally, it is inaccurate to call programmed materials "instructor-proof". These materials are used in an interactive environment with instructors and students. Other stimuli and reinforcers support a student's learning with programmed material.

2. FLEXIBLE INDIVIDUALIZED PROGRAMS:

In the flexible individualized program, the organization determines the objectives, but the student decides how to reach the objectives. Here we are talking about the project approach to learning. In addition to instructor-made "term projects", you can purchase complete projects, such as: Man A Course of Study. In either case, projects have both academic and expressive objectives. By expressive objectives we are referring to broad objectives such as "independence" and "creativity". The general idea is, that after students use these programs, you should expect many students to have developed creative and independent skills.

3. PERSONAL INDIVIDUALIZED PROGRAMS:

In the personal individualized program, the organization sets extremely flexible methods for learning and students select the objectives. This type of individualized instruction is characterized by unique learning environments, where the students need extremely knowledgeable facilitators and mediators. Learning and

programs appear to develop spontaneously, but it is the instructor's planning and careful mixing of questions, models, silence and patience that produces the spontaneity. To operate effectively as an instructor in this type of program, you first have to have a special set of skills, a large amount of self-regulation and creative behaviours in several different areas.

4. INDEPENDENT STUDY:

Here, the student and instructor set the objectives and determine the means by which they are to be attained. Only highly motivated, self-directing students seem to be suited for this type in individualized instruction. You may want to encourage some of your students to develop self-management skills to learn in this manner. However, please realize, that it will be unfair to ask most of your students to master materials by this approach, unless you are willing to help them master the prerequisite skills.

There are four main advantages to individualized instruction: First, the student has the opportunity to master the material at his/her own rate. However, students must learn self-regulation before they can do this. Second, the student has a high rate of interaction with the learning environment, which facilitates learning. Third, the student is immersed

in the material. Fourth, self-regulation can be practiced very effectively in individualized instruction.

The disadvantages of individualized instruction is that it is expensive in terms of time, especially the teacher's time, as the students are not working at the same rate and all seem to want attention at the same time.

SMALL-GROUP INSTRUCTION

As an instructor, you may often run across small groups of students who have roughly the same learning goals, yet each student is still quite unique. For such a group of students, having the same learning goal, for example, mastery of the third person writing style, you will have to plan and mediate selected activities in small-group instruction to help these students meet their unique as well as common learning goals. This special planning of learning activities and facilitation of instruction to meet the common needs of several students, is referred to as small-group instruction. Many different kinds of small-group instruction can be used in your classes. Let's take a look at three alternatives which are fairly common: -

1. TEAM PROJECTS:

   At some point in your academic career, you probably were a member of a team project. In some cases, the instructor selected the project topics and set up detailed checklists of what was expected on the project report.

As long as each student contributed in a planned and anticipated manner, everything was A-OK. There were also the team projects, in which the team members, the topics and formats for the reports were selected by the students. Somewhere between complete instructor control and complete student control is a reasonable midpoint for structuring team projects.

You might want to consider the use of team projects for their side effects. For example, suppose you were teaching an English-As-A-Second-Language class and you assigned a good student, an average student, a talker and a quiet student to a team project. As you observe this group working together over time, you will find the quiet one becoming more active, the talkers slow down, the good writers become better speakers and so forth. Thus, in these structured groups, the obvious emphasis can be the development of academic skills while at the same time unanticipated affective-social changes can occur. In addition, you may also find these small groups build friendships, trust and peer support.

One of the difficulties with the team approach is that "the team" appears to control each member's class performance. For some students, this type of external control is very positive. For others, however, other

types of small-group instructions would seem to be more appropriate as they find it confining and restrictive. Another problem is that one member may be "carried" by the other group members. If grades are assigned a non-functional member can be very costly to the group.

2. DISCOVERY LEARNING:

Another small group instructional technique is discovery learning, which has as its goal, the promotion of independent thinking. While this technique looks easy in operation, it is a very demanding type of applied, guided problem-solving. The supporters of the discovery learning technique suggest that it facilitates transfer and promotes self-motivation.

As an instructor, you may want to use discovery learning at appropriate times. As discovery learning is nothing more than guided problem-solving, this technique works best for students who have had some successful problem-solving experiences. Further, students who are really "turned on" to learning, seem to benefit more from discovery learning than students who have low motivation.

In the same way, a special kind of instructor is needed for discovery learning. This instructor is one who has the time and energy to plan each cue, question, and piece of instructional material. In addition this

instructor has the patience to let the students learn on their own. If you choose to use this approach, you must be adept at communicating in non-verbal ways. That is, a smile, nod of the head or pat-on-the-back are common non-verbal communication techniques. With patience and care, you will be able to master many of the pre-requisite skills for guiding discovery learning.

Please remember, discovery learning is not for all students. Hopefully, you have the idea by now, that no single form of instruction is good for every student. Discovery learning works best with the self-regulated students who are able to generate their own questions and inferences about the learning activities.

3. GROUP DISCUSSIONS:

This third type of small-group instruction is very common. Small-group discussions offer students some excellent opportunities for learning. There is just one little problem; each member of the group has to be ready to participate and contribute to the discussion. Involvement can be promoted by randomly calling on students for their opinions. In group discussions, you and your students have the chance to become immersed in the topic. Objectives for the discussion can be set jointly and the directions within the group are nearly without limits. Further, the discussions allow for

practice in self-expression, adapting to the other person's point of view (even if it is wrong), learning to take constructive criticism and reach conclusions. The students in a well planned group discussion will be "involved". They will have eye contact, direct interaction with each other and relate to one another in many ways.

Thus, the focus is on the students making up the group. You will soon discover that small-group discussions are better in certain kinds of situations, involving selected students with specific skills and goals. Here, are several guidelines for conducting a small-group discussion.

(1) Guiding the Discussion:

Try to guide the discussion so each of your students will have something to remember. You can learn how to mediate a small group. The skills can be mastered quite readily. You will have to learn to give up some of your control to the students. For example, you might move to the periphery of the group, restate ideas, fade-out and reinforce the speakers or their ideas. Over time, you will master the technique of question asking rather than speech-making. You will also learn to encourage participation by some students, offer alternatives, avoid

prejudgments, looking at the speaker and being silent when appropriate. It takes a great deal of practice to get this technique operating to perfection.

(2) Clarifying Ideas:

Small-group discussions are excellent for clarifying ideas in areas where there is no agreement. The group-discussion learning can be a forum for the exchange of ideas and the building of agreement.

(3) Facilitation of Critical Thinking:

A very important aspect of group discussions is that they occur at the right times. This is where it is necessary to assess your students to determine if they are ready. That is, do your students have an adequate grasp of the ideas or concepts in order to discuss them properly? You will have to be ready to act as a mediator before discussions reach the boiling point.

The advantages of small-group instruction are: more students can be involved, different learning models are available and different media can be used. The disadvantages, again, are in terms of the time and effort the instructor must put forth in order to make the small-group function effectively. You also have to watch in order to avoid the "pooling of ignorance."

LECTURE INSTRUCTION

The lecture method is generally a formal one-way communication between the instructor and a group of students, where the instructor presents for the group's consideration, a series of related concepts or ideas that have been carefully organized ahead of time. The instructor is in complete control and determines what and how the material is to be covered, what is to be emphasized and how much time is to be spent working on each concept or idea.

As an instructor, you will often speak to your entire class. In such situations, you have probably made the decision that they are all ready for the material you are going to deal with or that they all need it. You will find the lecture instruction technique is a way of organizing your materials and presenting them so as to provide some degree of arousal value. This technique is one way of providing students well-organized, important but otherwise forgotten material.

This definition of lecture discussion is a cue for you. Well-organized materials are always hard to come by. You will have to spend hours working on your lectures, which is really tough for your first time in the instructional setting. In addition to the well-organized material, you have to keep the students' attention, so the material and its presentation have to be interesting and appealing to the students. You must also be aware that the students are going to

- and we know this is going to cut you to the quick - they are going to forget these great gems of information you have dropped on them, and rather quickly too we might add. Further, the students are supposed to be fairly quiet and be paying attention to what you are presenting. There are, however, phenomenal individual differences among the students in your class. A few take no notes and absorb and understand nearly all of the material. A few more take no notes and while looking very thoughtful all the way through the course, you are slowly gathering information that not even one little neuron had fired during the entire term. Then, of course, we have those students who prefer interactive learning. These students feel they learn best by interacting with other students during your lecture. It wouldn't be so bad if they at least talked about something you had covered, but it is often a completely different topic. Then there are those borderline cases that could be in deep thought about the material you're covering, staring at their navel or have mastered the feat of sleeping with their eyes open. What we are telling you is that not all students are wide awake, alert and eager to learn during lectures. Lectures can be appropriate for selected students and certain course content, but they may not work for everyone.

The effectiveness of the lecture method can be greatly enhanced through the appropriate sequencing of the important events during the lecture presentation. While not carved in stone, the following sequence has been found to work very effectively:

(1) Review or Warm-Up:

The review or warm-up is needed in order to develop a positive mental set in the students toward the material and toward yourself. In effect, this is getting the students ready for the presentation. This is most easily accomplished by doing a short review of the material you have covered in the previous lecture.

(2) Objectives:

A statement of what you expect to cover in the lecture is necessary in order to direct the attention of the students to the most important concepts, competencies and ideas to be covered in the lecture. In addition, the objectives let the students know what you expect them to be able to do as a result of the instruction.

(3) Delivery:

The presentation of the material, keeping in mind proper sequencing, clear delivery, appropriate emphasis, and utilization of aids such as slides, transparencies or the chalkboard. During the presentation of the lecture,

instructors should keep in mind the "attention span" of the learner. In general, the lecture should not be more than 45-50 minutes in length, no matter how well-organized the material. For classes of two or three hours duration, techniques such as pacing, short stretch breaks, problems to solve and discussion of other topics work well to reduce fatigue.

(4) Evaluation:

In this phase of the lecture, the instructor attempts to evaluate whether the objectives were attained. This is usually accomplished through questioning, examples, problems, tests, and examinations.

(5) Closure:

This aspect of the lecture includes a summary of the important concepts, skills and ideas that have been presented. This is followed by a brief presentation of what will be covered during the next lecture.

Lectures can involve either small or large groups. Each group size has some unique characteristics. We now take a closer look at these characteristics.

1. SMALL-GROUP LECTURES:

For most of you, a small-group lecture will be a common approach to managing your classes. You will be trying to talk to 35 to 45 students at one time. With this instructional technique, you will soon discover that

some students will interact with you. A few will ask questions, one or two will smile at your jokes and you might even get one student to answer another student's question. In this small-group lecture involving the entire class, you will also lose some of your students. They will stay in the room, but drop out of class.

2. LARGE-GROUP LECTURES:

Some of you may end up in the situation where the large group lecture is employed for certain instructional purposes. Should you be faced with the large-group lecture format, there are five guidelines that you had better keep in mind at all times: -

First, establish a close relationship with your audience. You have to let your students know that you are aware of them and that you are concerned for them. You must come to lecture early and talk with a few of the students, talk to others during a break or after class. Avoid the "eye contact" problem by looking at various students as you are going through the various points or concepts. For God's sake, don't talk to just two or three people in the first few rows or you may well lose the rest of the class.

Second, you have to gain your students' attention. As you are well aware, a student may be staring at you with great intensity and still be "out-to-lunch." Hence, you

want to encourage the behaviours that go with the label attention. To get your students locked into your lecture, a wide variety of approaches have been utilized. For example, you may raise or lower your voice, you might use humor, excellent graphics (pictures, slides, transparencies), and/or you might try the use of costumes to gain and maintain the attention of many of your students. There, you will be mixing art and skill, and the more adept you are, the better you will come across to the students.

Third, make the lecture material relevant. A great deal of the course material we have to deal with can be dull and all hell. To leave it in the dull state and cram it down their throats is called "losing the troops." They may be there physically, but they sure are on a different mental wave length. To solve this problem it may be helpful to relate the material to examples from your students' day-to-day experiences. For emphasis of the main points, you can karate chop the podium or kick the wall.

Fourth, use advanced organizers. Advanced organizers are verbal cues given prior to a learning task to help direct and focus the learner's attention. The advanced organizers in a lecture provides a framework for your presentation. You must remember that a carefully worded

statement of your purpose can really let your students zero in on your ideas, assuming that they are able to understand the cues you give them.

Fifth, convey enthusiasm. On many topics, it may require super-human effort to prepare a complete lecture that is interesting and about which you can be enthusiastic. However, the effort is well worth it. We are sure you have run into instructors who were dull with a capital D. For some of these instructors, a different instructional technique or more time and attention to organization may have helped to improve their material. You have also probably had instructors who were poor lecturers, but were great as one-on-one helpers. In the one-on-one situation, commonly known as tutoring, you have the chance to interact and to stimulate the student, so the topic does not seem dull after all.

The advantages of the lecture technique of instruction are: - dealing large numbers of students at one time, having to have the material organized and making the lecture material relevant. The disadvantages of the lecture method are: - possible inability to develop and maintain enthusiasm about the lecture material, not establishing a relationship with your audience and not gaining or maintaining your students' attention.

There are several important problems that students have to overcome in order to operate effectively in the lecture setting.

1. LISTENING SKILLS:

   Students who do not have "lecture listening" skills need the prerequisite training. There is a great deal of research that demonstrates that note-taking is an effective learning/strategy. Students who take notes during lecture remember more than those who do not take notes. Further, the quality of the notes relates directly to retention. Thus, information contained in the notes has a much higher probability of being recalled.

2. ATTENDING TO SIGNAL CHANGES:

   Use tonal changes, change in facial expression or body language as ways of signaling students to anticipate words, phrases, concepts or ideas. If you are using a transparency on an overhead projector as a means of displaying your topical outline for the lecture, move toward the screen and point out the particular component of the outline with which you are dealing. Unless you really want to "rattle" the troops, change the tone of your voice when you shift from serious lecture material to telling a story.

3. RETROACTIVE INHIBITION:

This concept refers to the idea the newly learned material can interfere with the memory or retention of previously learned material. About all that students can handle is 45-50 minutes of really well-organized material that flows in a logical sequence. After that, they have to have a break. There is a good body of research evidence to support the view, that regardless of how much time is allotted, for example, a three-hour evening session - two, well-organized, smooth flowing, 45-50 minute sessions with a break in between will be far more effective for the student, than getting up in front of them and droning on and on, just to fill in the allotted time. Unfortunately, many administrators are not aware of these findings and even fewer instructors are well organized enough to have their material flow smoothly from point to point in a meaningful manner, to present a really interesting, concise and meaningful lecture.

4. CONTROL OF CLASSROOM BEHAVIOUR:

There are numerous ways of exerting control over classroom behaviour without resorting to the use of grades as punishment. When lecturing, look directly at disruptive students, or perhaps walk around the room until you are in the immediate vicinity of those causing the dis-

ruption. If they are continually chatting, a direct question to see if they need further clarification usually gets a positive response, if not asking the disruptors to share their views with the class will usually do the job. It also helps if you can learn to continue to face the students, even when writing on the board. Finally, keep moving, don't hide behind the lectern or podium.

MASTERY LEARNING

You now have some idea of the various types of instructional techniques available, as well as their advantages and disadvantages. No matter which instructional technique(s) you choose, you will want to plan for your students' mastery of the learning objectives. In this section, we will cover mastery learning and how you can use it to work with your students.

Mastery learning involves four basic beliefs about education:

1. Students have an Aptitude for Learning: - This is a basic belief for the instructor utilizing the mastery learning approach and it is crucial for success. Following the definition of Dr. Karel Puffer, an aptitude in the mastery learning sense, refers to the time needed by a student to master a given learning activity or a sequence of course material. For example, Susan

does have the aptitude to learn how to operate a bulldozer effectively; she needs enough time to master the required skills. In addition to an aptitude for learning, students also need an expression of faith in their ability to learn.

2. Differential Instructional Techniques are Needed: - In mastery learning, the instructional materials and techniques are taken from the objectives and the task analysis. These materials and techniques, like any course materials, have to be updated frequently. For the mastery learning approach, you will want to have many different approaches available to deal with any type of student at any level of ability. This orientation goes along with the idea that no one instructional technique is best for all students. Here, you are working very closely with each student. It is also a good idea to use frequent assessments to facilitate the students' adjustments in learning.

3. Objective and Learning Tasks are Clearly Stated: - In the mastery learning approach, both students and instructors work in a "no tricks" environment. That is, the common game of the student trying to guess what the instructor is going to do next, or what he/she will assess is a definite no-no. Here, you work to develop a sense of cooperation between yourself and your students.

Sharing and clarifying are key components when you are dealing with this mastery learning belief.

4. Perseverance at the Task: - This fourth and last crucial belief in the mastery learning approach is that students and instructors will not give up - they will stick to the task at hand. This does not occur in a haphazard manner, but rather, is the result of setting the objectives and running a task analysis that allows for many chances for success. Each mastered objective can add to the student's list of competencies. Thus, in mastery learning, the environment seems to get students involved, encouraging them to try for the next objective.

The major advantages of the mastery learning approach is that it can produce some very excited, self-regulated students who want to learn on their own schedule. The major disadvantages of the mastery learning approach are: - First, mastery learning may not be for everyone. Not every student or instructor or organization is ready for mastery learning. It takes a tremendous amount of planning and preprogram preparation to get people ready for this type of educational change. This is especially true for Arts and Science orientations. Second, the mastery learning approach calls for extensive record keeping on each student. This is necessary to help the students grow, rather than to guarantee the comfort of instructors and administrators. Third and finally, there is

a tendency for mastery learning to reinforce students for learning only the performance objectives. This disadvantage occurs only when you set up narrowly defined objectives. That is, you can broaden your objectives to include problem-solving, creativity, and divergent thinking tasks.

CURRENT INSTRUCTIONAL INNOVATIONS

EDUCATIONAL GAMES AND SIMULATIONS:

In an effort to make learning more fun, a broad range of educational games have been identified, adapted and created. All you have to do is walk through the toy section of any large department store and read the labels on the toys. When the label states that the game is for people of all ages, you better believe it. Now, in addition to being fun ways of learning, many of these games offer "safe" simulations of real future experiences. These games and simulations have objectives; the activities are related to the objectives, and the rewards are given for reaching goals. Students can really get involved and excited, and will frequently be rewarded by these games which are like learning activities. You might want to consider educational gaming in your management of your courses. Videotaping, particularly of student performance of skills can be an extremely valuable tool for providing feedback to the student.

TEAM TEACHING:

The idea that one person could or should know everything there is to know about any learning skill area is slowly falling by the wayside. In some educational situations, individual instructors are beginning to team up to organize their courses. The teams may evolve on the basis of expertise in particular areas of knowledge, or they may be the result of assigning lecture sessions to those adept at the technique and assigning small-group instruction to other instructors who have greater strengths with those particular techniques.

PROGRAMMED INSTRUCTION:

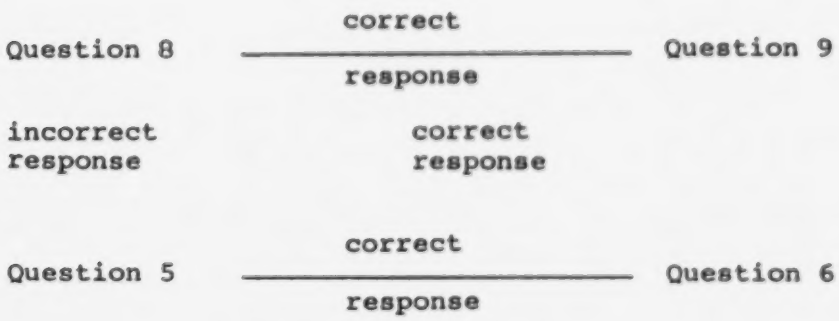
Programmed instruction refers to any organized procedure that presents information in a manner that it can be learned without the aid of an instructor. Programmed instruction is often referred to as auto- or self-instruction. In general, programmed instructional techniques fall into one of two categories: The Linear program, which is commonly associated with B.F. Skinner; and The Branching program, which was developed by N.A. Crowder.

The Linear program is based on operant conditioning principles, where all students progress through the same information in the same sequence. The operant conditioning component involves the sequencing of material that leads the student to emit a correct response, which is followed by a

reinforcement for the correct response. The main characteristics of a linear program are: The information is broken down into small steps called frames, which are sequenced in a logical order; the students are required to make frequent responses, usually at least one response for every frame; and the linear programs provide immediate feedback to the student about his/her results.

The Branching program has built-in loops to deal with remediation problems. That is, students who give all of the responses correctly, go right straight through the program. However, students who make errors, receive remedial instruction and further instruction in the material they did not know adequately. This is accomplished through the use of a remedial frame(s) which sends them back into the program for further learning before they are able to advance.

The branching sequence might look something like this:



COMPUTER-ASSISTED INSTRUCTION (CAI):

Computer-assisted instruction involves the development of programs to be utilized on computers to assist the student in the learning process. The programs run from the simple drill-type, on up to very complex systems. Major advantages of computer-assisted instruction are; phenomenal information storage; rapid retrieval of information; versatility in presentation methods; and problem-solving capacities. All of these factors, of course, allow for communication on an individual basis. Computers have been very effective in a number of instructional areas such as: computation and problem-solving tasks; drill and practice as in language and mathematics; simulation situations and games; and tutorial instruction.

PERSONALIZED SYSTEM OF INSTRUCTION (PSI):

The Personalized System of Instruction is an offshoot of Bloom's Mastery Learning approach. For both approaches, aptitude is viewed as a function of the speed with which the student learns. However, if all students are given the most optimal learning conditions possible, the relationship between aptitude and achievement is quite small. With the PSI orientation, a course or program is broken down into small units, with appropriate instructional material for each unit. The student is then allowed to take as much time as he/she needs to learn each of the units. Quizzes or tests

are available for each unit when the student feels that he/she is ready. These quizzes and tests are scored immediately, letting the student know whether to go back for a re-run or to move forward to the next unit. At the end of the course or program a comprehensive examination is administered covering all of the course material.

INTERACTIVE VIDEO:

With this instructional mode, we have the combination of utilizing videotapes and the computer. The student, at the computer terminal is presented a mini-lecture on video tape. For example, the definition, computation and uses for the mean. After the mini-lecture, a series of multiple-choice problems is presented to the student, as well as some computational exercises. The computer will tell the student whether he/she is right or wrong. If the answers are right, the unit continues. If the answers are wrong, the videotape comes back on to the spot where remediation is necessary, if the student is to understand the concept of the mean.

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